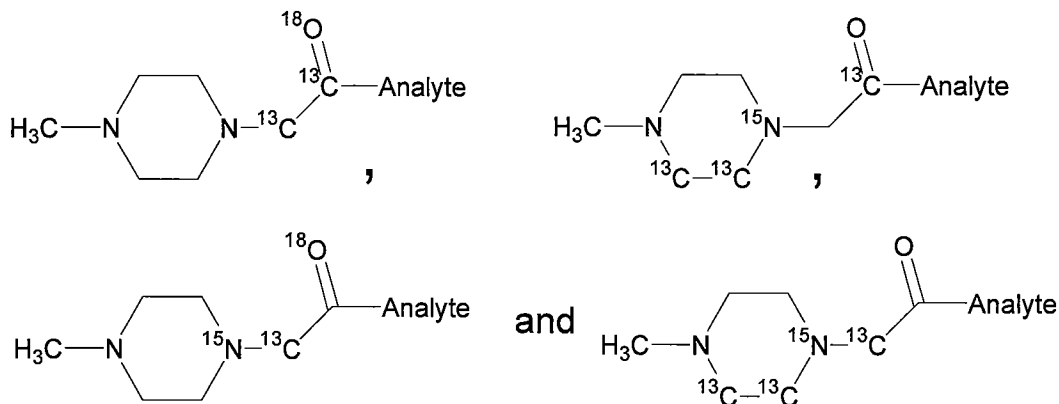


I. AMENDMENT

PLEASE ENTER THE FOLLOWING AMENDMENT WITHOUT PREJUDICE OR DISCLAIMER. Applicants reserve the right to file a divisional or continuation application to the originally filed claims. Text deleted from the original appears in ~~strikethrough~~ and text to be added to the original has been underlined. The following listing of claims will replace all prior listings and versions of the claims in this application.

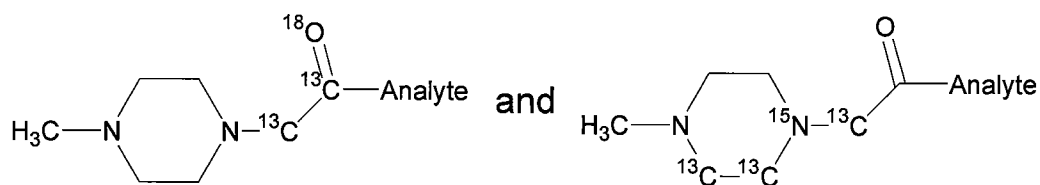
## Claims 1-20 (Canceled)

21. (Currently Amended) A mixture comprising fragment ions existing in a mass spectrometer and ~~derived~~ generated by fragmentation of at least two differentially labeled molecules of an analyte wherein at least two of the differentially labeled analyte molecules are compounds of a formula selected from the group consisting of:



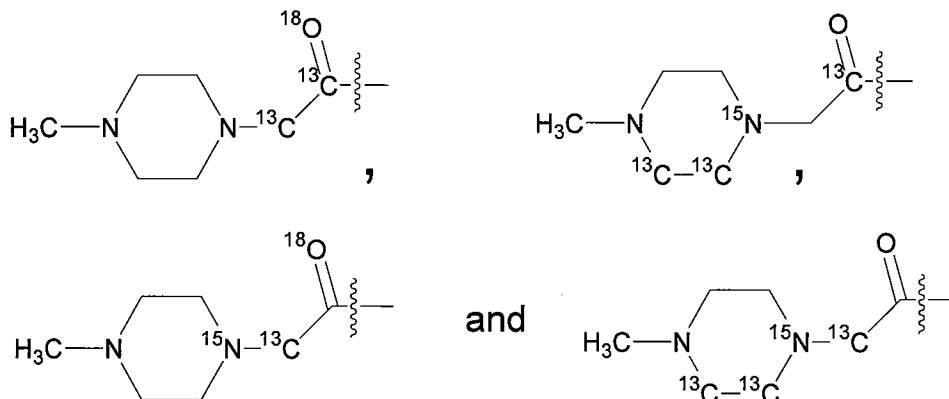
22. (Previously Presented) The mixture of claim 21, wherein the analyte is a peptide.
23. (Previously Presented) The mixture of claim 21, wherein the analyte is a protein.
24. (Previously Presented) The mixture of claim 21, wherein the analyte is a nucleic acid.
25. (Previously Presented) The mixture of claim 21, wherein the analyte is a carbohydrate, lipid or steroid.

26. (Previously Presented) The mixture of claim 21, wherein the analyte is a small molecule with a molecular weight of less than 1500 daltons.
27. (Previously Presented) The mixture of claim 21, wherein the molecular formula of at least one of the fragment ions is an ion selected from the group consisting of:  
 $^{13}\text{CC}_5\text{H}_{13}\text{N}_2^+$ ,  $^{13}\text{CC}_5\text{H}_{13}^{15}\text{NN}^+$ ,  $^{13}\text{C}_2\text{C}_4\text{H}_{13}^{15}\text{NN}^+$  and  $^{13}\text{C}_3\text{C}_3\text{H}_{13}^{15}\text{NN}^+$ .
28. (Previously Presented) The mixture of claim 21, wherein the mass spectrometer is a tandem mass spectrometer.
29. (Previously Presented) The mixture of claim 21, wherein the mixture of fragment ions is generated by subjecting ions, of a select  $m/z$  value, of the differentially labeled analyte molecules to dissociative energy levels.
30. (Previously Presented) The mixture of claim 21, wherein the differentially labeled analyte molecules are generated by labeling different samples, each sample comprising one or more analytes, with a different isobaric label of a set of isobaric labels such that the analytes of a sample are labeled with the same isobaric label but are differentially labeled as compared to the labeled analytes of a different sample.
31. (Currently Amended) A mixture comprising fragment ions existing in a mass spectrometer and derived by fragmentation of at least two differentially labeled molecules of an analyte wherein at least two of the differentially labeled analyte molecules are compounds of a formula selected from the group consisting of:

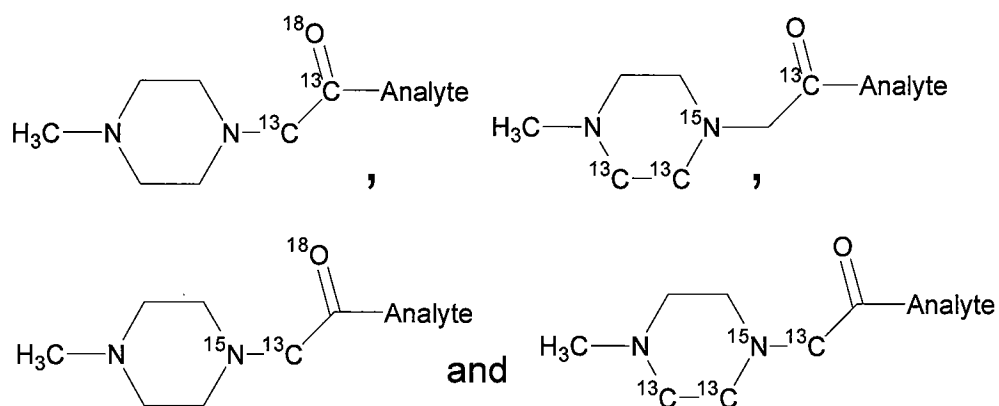


~~wherein the fragment ions are either positively or negatively charged.~~

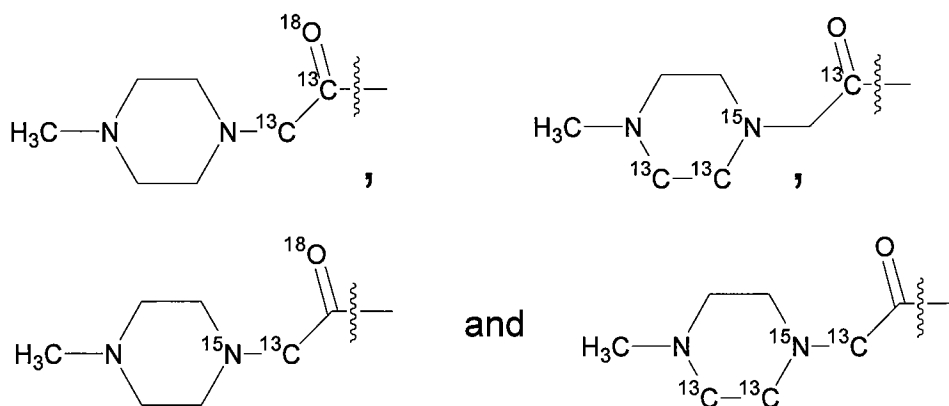
32. (New) Fragment ions generated by fragmenting in a mass spectrometer a sample comprising first and second amounts of the same analyte molecule, wherein each amount is labeled with a different label selected from the group consisting of,



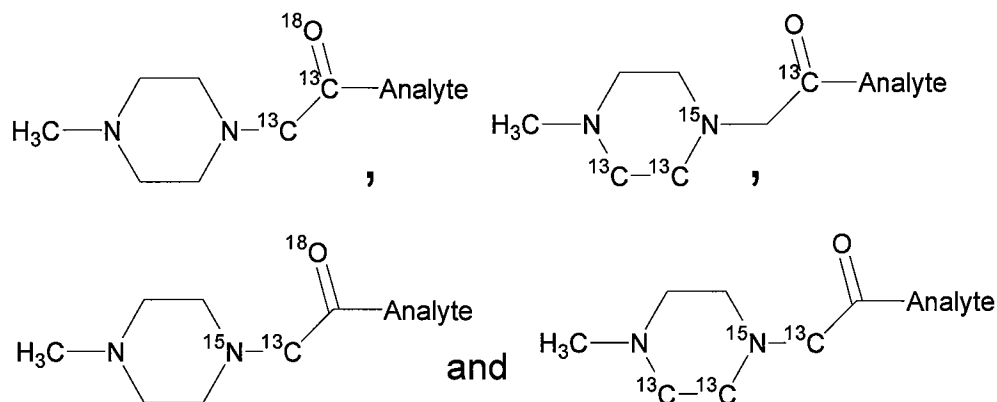
33. (New) The fragment ions of claim 32, wherein the analyte molecule is a peptide, a protein, a nucleic acid, a carbohydrate, a lipid, a steroid or a molecule having a molecular weight of less than 1500 daltons.
34. (New) The fragment ions of claim 32, wherein at least one of the fragment ions is selected from the group consisting of:  $^{13}\text{CC}_5\text{H}_{13}\text{N}_2^+$ ,  $^{13}\text{CC}_5\text{H}_{13}^{15}\text{NN}^+$ ,  $^{13}\text{C}_2\text{C}_4\text{H}_{13}^{15}\text{NN}^+$  and  $^{13}\text{C}_3\text{C}_3\text{H}_{13}^{15}\text{NN}^+$ .
35. (New) The fragment ions of claim 32, wherein the mass spectrometer is a tandem mass spectrometer.
36. (New) The fragment ions of claim 32, which are generated by subjecting ions of the sample having a selected m/z value to dissociative energy levels.
37. (New) Fragment ions generated by fragmenting in a mass spectrometer a sample comprising at least two molecules selected from the group consisting of:



38. (New) The fragment ions of claim 37, wherein the analyte is a peptide, a protein, a nucleic acid, a carbohydrate, a lipid, a steroid or a molecule having a molecular weight of less than 1500 daltons.
39. (New) The fragment ions of claim 37, in which at least one ion is selected from the group consisting of:  $^{13}\text{CC}_5\text{H}_{13}\text{N}_2^+$ ,  $^{13}\text{CC}_5\text{H}_{13}^{15}\text{NN}^+$ ,  $^{13}\text{C}_2\text{C}_4\text{H}_{13}^{15}\text{NN}^+$  and  $^{13}\text{C}_3\text{C}_3\text{H}_{13}^{15}\text{NN}^+$ .
40. (New) The fragment ions of claim 37, wherein the mass spectrometer is a tandem mass spectrometer.
41. (New) The fragment ions of claim 37 which are generated by subjecting ions of the sample having a selected  $m/z$  value to dissociative energy levels.
42. (New) A fragment ion generated by fragmentation, in a mass spectrometer, of a composition comprising isobarically labeled analyte molecules, at least one of which is labeled with a label moiety selected from,

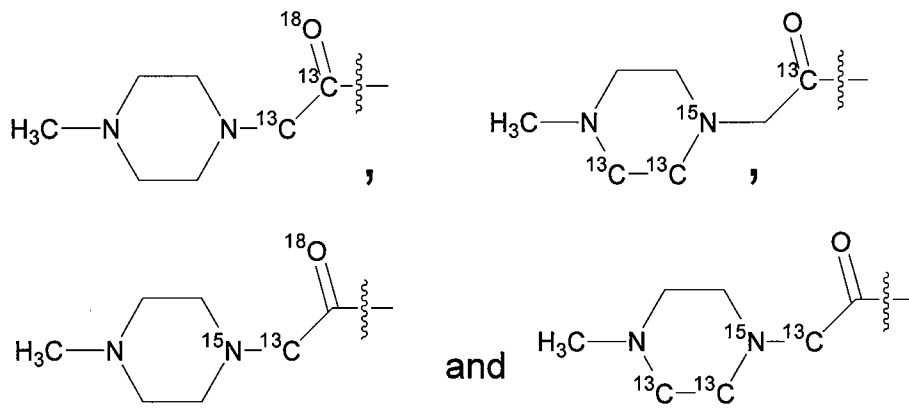


43. (New) The fragment ion of claim 42, wherein the analyte is a peptide, a protein, a nucleic acid, a carbohydrate, a lipid, a steroid or a molecule having a molecular weight of less than 1500 daltons.
44. (New) The fragment ion of claim 42, which is selected from the group consisting of:  $^{13}\text{CC}_5\text{H}_{13}\text{N}_2^+$ ,  $^{13}\text{CC}_5\text{H}_{13}^{15}\text{NN}^+$ ,  $^{13}\text{C}_2\text{C}_4\text{H}_{13}^{15}\text{NN}^+$  and  $^{13}\text{C}_3\text{C}_3\text{H}_{13}^{15}\text{NN}^+$ .
45. (New) The fragment ion of claim 42, wherein the mass spectrometer is a tandem mass spectrometer.
46. (New) The fragment ion of claim 42 which is generated by subjecting selected ions of the labeled analytes to dissociative energy levels.
47. (New) A fragment ion generated by:
- ionizing in a mass spectrometer a sample comprising isobarically labeled analyte molecules; and
  - fragmenting ions generated that have a selected m/z value by collision induced dissociation;
- wherein at least one of the labeled analyte molecules is selected from the group consisting of:

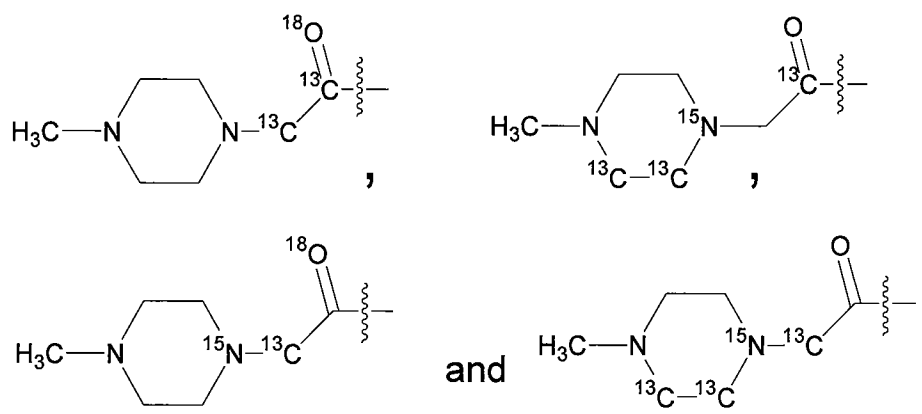


48. (New) The fragment ion of claim 47, wherein the analyte is a peptide, a protein, a nucleic acid, a carbohydrate, a lipid, a steroid or a molecule having a molecular weight of less than 1500 daltons.
49. (New) The fragment ion of claim 47 which is selected from the group consisting of:  $^{13}\text{CC}_5\text{H}_{13}\text{N}_2^+$ ,  $^{13}\text{CC}_5\text{H}_{13}^{15}\text{NN}^+$ ,  $^{13}\text{C}_2\text{C}_4\text{H}_{13}^{15}\text{NN}^+$  and  $^{13}\text{C}_3\text{C}_3\text{H}_{13}^{15}\text{NN}^+$ .
50. (New) The fragment ion of claim 47, wherein the mass spectrometer is a tandem mass spectrometer.
51. (New) Fragment ions generated by a method comprising the steps of:

labeling a control sample comprising a molecule of interest with a label comprising a moiety selected from the group consisting of:

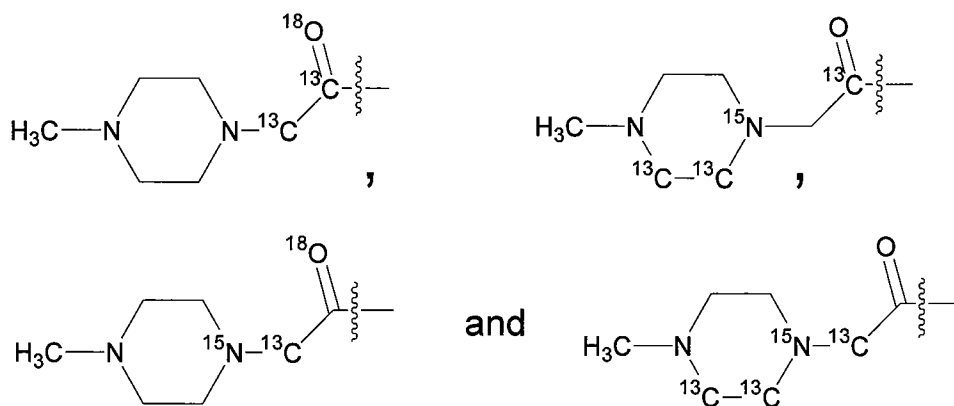


labeling a test sample comprising the molecule of interest with a different label comprising a moiety selected from the group consisting of;



mixing the control and test samples together to yield an analysis sample;  
 ionizing at least a portion of the analysis sample in a mass spectrometer; and  
 fragmenting a resultant ion having a selected m/z value by collision induced dissociation.

52. (New) Fragment ions generated by fragmenting in a tandem mass spectrometer a sample comprising first and second aliquots of an analyte molecule, each of which is labeled with a different label comprising a moiety selected from the group consisting of:



53. (New) A fragment ion selected from the group consisting of <sup>13</sup>CC<sub>5</sub>H<sub>13</sub>N<sub>2</sub><sup>+</sup>, <sup>13</sup>CC<sub>5</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup>, <sup>13</sup>C<sub>2</sub>C<sub>4</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup> and <sup>13</sup>C<sub>3</sub>C<sub>3</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup>.
54. (New) A collection of fragment ions, at least two of which are different ions selected from the group consisting of <sup>13</sup>CC<sub>5</sub>H<sub>13</sub>N<sub>2</sub><sup>+</sup>, <sup>13</sup>CC<sub>5</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup>, <sup>13</sup>C<sub>2</sub>C<sub>4</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup> and <sup>13</sup>C<sub>3</sub>C<sub>3</sub>H<sub>13</sub><sup>15</sup>NN<sup>+</sup>.